AMENDMENTS TO THE TITLE:

Please amend the title as follows:

MULTIPLE-STAND ~~PHOTOGRAVURE~~ GRAVURE PRINTING MACHINE AND ~~PHOTOGRAVURE~~ GRAVURE PRINTING PROCESS

AMENDMENTS TO THE ABSTRACT:

Please replace the Abstract beginning at page 11, line 1 with the following new Abstract:

Abstract of the Disclosure

Multiple-stand ~~photogravure~~ gravure printing machine with a first (10) and at least an additional printing unit (12a, 12b), each containing an impression roller (32, 52) and a driven print cylinder (34, 54), characterized in that in the at least one additional printing unit (12a, 12b) the impression roller (52) is provided with a regulated drive (56) and is in contact with the printable material (16) such that it can sustain a web velocity of the printable material (16) different from the circumferential speed of the adjoining print cylinder (54).

AMENDMENTS TO THE SPECIFICATION:

Please replace the two paragraphs beginning at page 1, line 4 with the following paragraphs:

The invention relates to a multiple-stand ~~photogravure~~ gravure printing machine with a first printing unit and at least one additional printing unit, which contain in each case each an impression roller and a driven print cylinder, as well as a ~~photogravure~~ gravure printing process for such a photogravure machine.

In a conventional ~~photogravure~~ gravure printing machine a web of printable material runs through a gap between a driven ~~photogravure~~ gravure print cylinder ~~machine~~ and a non-driven cylinder - the so-called impression roller - which presses the web against the ~~photogravure~~ gravure print cylinder. When a plurality of images is to be overprinted in accurate register - for example in multi-color printing - a plurality of printing units, also known as stands, are arranged in series. After each stand, the web passes through a dryer and a cooler and is then fed to the next printing unit where another image is overprinted such that it is in the correct position with respect to the image previously printed. This is controlled by means of register marks, which are applied to the printable material web and are detected optically. So that, on the one hand, the register accuracy will be sustained and, on the other hand, the web

tension applied to the web by the driven print cylinders will remain constant, the print cylinders must be driven at exactly the same rotational speed and they must also have exactly the same diameter. If the diameters of the print cylinders differ from one another but slightly, by a few tenths of a millimeter, the print lengths of the imprinted images will differ slightly from one another according to the circumference of the print cylinder and the transport velocities with which the web is transported through the various printing units will also vary. The result can be that the web between the individual printing units may increasingly sag or instead become excessively taut. If the speeds of the print cylinders are matched so that the web tension remains constant, the different print lengths accumulate over time to become a perceptible registration error.

Please replace the two paragraphs beginning at page 2, line 5 with the following paragraphs:

Pursuant to the invention, this objective is achieved owing to the fact that, in a ~~photogravure~~ gravure machine of the kind referred to above, the impression rollers are also provided with a controlled drive and are in contact with the printable material, so that they can sustain a web velocity ~~on~~ of the printable material ~~varying~~ differing from the circumferential speed of the print cylinder applied to them.

The velocity of the web transport in a printing unit is then determined ~~in a printing unit~~, no longer by the rotational speed of the print cylinder but by the rotational speed of the impression roller. At the same time, differences in the circumferential speed of the print cylinder relative to the printable material can be compensated. It is a prerequisite ~~The assumption is~~ that the web adheres better to the circumferential surface of the impression roller better than it does to the circumferential surface of the print cylinder. This can be brought about by passing the web above the impression roller on an idler, so that it wraps around the impression roller on a greater circumferential length. In some cases, however, even a sufficient contact force between impression roller and print cylinder, combined with the nature of the surface of the impression roller, will suffice for good adherence.

Please replace the paragraph beginning at page 2, line 25 with the following paragraph:

In a preferred embodiment of the ~~photogravure~~ printing machine of the invention, during the print operation the drive of the impression roller of the first printing unit determines the web velocity for the drives of the other impression rollers. The impression roller drives in the ~~added~~ subsequent printer units are regulated in a closed control circuit such that the web

tension remains constant. The web tension ahead of the particular printer unit is measured by means of a measuring roller, and the impression roller drive is varied according to the measured web tension. In this manner, a uniform and constant web tension is assured over all of the printer units.

Please replace the two paragraphs beginning at page 3, line 6 with the following paragraphs:

Preferably, the drive of the print cylinder of the first printer unit determines the speed of the next print cylinder in order. Ideally, all print cylinders run at precisely the same rotational speed. If the diameter of the next-following print cylinder is slightly too great, a slippage occurs in the printer unit involved, between the print cylinder and the web. However, this does not perceptibly impair the printed image. By means of an optical sensor, the register marks are detected ~~in back~~ downstream of the print cylinder, and a register error $\Delta\varphi$ of the newly printed image is measured with reference to the register marks. The print cylinder is then briefly accelerated or retarded in order to compensate the register error.

In this way, ~~if the web tension is uniform~~ it is possible to achieve a uniform web transport at constant web velocity, while ~~with~~ a uniform, constant rotary speed of the print cylinders provides for printing in perfect register, possibly

with ~~in some cases~~ a slight slippage of the print cylinders relative to the printable material~~, printing in perfect register is achieved~~. But this slight slippage does not visibly impair the printed image.

Please replace the paragraph beginning at page 4, line 8 with the following paragraph:

The steps of start-up and proofing are performed in a manner known in itself, yet, according to the invention, the impression rollers are energized and the web tension is regulated accordingly.

Please replace the three paragraphs beginning at page 5, line 14 with the following paragraphs:

The single figure of the drawing shows schematically the structure of a multi-stand ~~photogravure~~ gravure printing machine with three printing units.

The ~~photogravure~~ gravure printing machine represented has a first printing unit 10 and two additional printing units 12a and 12b. At the start of the path of the web 16 through the gravure machine is a reel 18, the drive of which is controlled by a control circuit 20 according to the level of a dancer roll 22. The web 16 then runs through a gap between two cylinders of a draw-in mechanism 14 and passes a first metering roll 28, which

measures the web tension.

In the first printing unit 10, the web 16 passes around an idler 30 and an impression roller 32, and is then carried through a gap between the impression roller 32 and a first print cylinder 34. An ink trough 36 and a doctor blade 38 are shown in the vicinity of the print cylinder 34. Only during start-up does a control circuit 40 regulate the drive of the impression roller 32 according to the web tension, which is measured by the metering roll 28. In printing operation, i.e., during the proofing and the print run, the measuring cylinder 28 is part of a control circuit 42, which controls the drive of the draw-in mechanism 14. In the printing operation, the drive of impression roller 32 determines the speed of the web 16 for the printing unit 10 and the additional printing units 12a and 12b.

Please replace the paragraph beginning at page 6, line 19 with the following paragraph:

While during start-up, the draw-in mechanism 14 establishes the speed of the web 16 and the control circuits 40 and 56 regulate the drives of impression rollers 32 and 52, ~~and~~ in the printing run the control circuit 40 is inactive. Instead, here the control circuit 42 regulates the drive of the draw-in mechanism 14, while the drive of impression roller 32 establishes the web velocity for the entire gravure machine.

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) Multi-stand ~~photogravure~~ gravure printing machine comprising:

a first printing unit containing an impression roller and a driven print cylinder, and

at least one additional printing unit, each including:

an impression roller in contact with a printable material,

a driven contacting print cylinder, and

a regulated drive associated with the impression roller to sustain a web velocity of the printable material ~~varying~~ differing from a circumferential speed of the contacting print cylinder.

2. (Currently Amended) Multi-stand ~~photogravure~~ gravure printing machine of claim 1, wherein, in the at least one additional printing unit, the regulated drive associated with the impression roller includes a metering roll, which is disposed adjacent to a course of the web and measures the web tension.

3. (Currently Amended) Multi-stand ~~photogravure~~ gravure printing machine of claim 1, wherein each driven impression

roller has a drive, in which an ~~acceleration or deceleration~~ advance or retardation can be set with respect to another impression roller.

4. (Currently Amended) Multi-stand ~~photogravure~~ gravure printing machine of claim 1, wherein the print cylinder of the at least one additional printing unit includes a drive, in which an ~~acceleration or deceleration~~ advance or retardation with respect to the print cylinder of the first printing unit can be set.

5. (Currently Amended) ~~Photogravure~~ Gravure printing process for a multi-stand ~~photogravure~~ gravure printing machine including a first printing unit containing an impression roller and a driven print cylinder, and at least one additional printing unit, each additional printing unit including an impression roller and a driven print cylinder, the process comprising the steps of:

actively driving the impression roller of the at least one additional printing unit and

regulating the web tension of a web by a drive of the impression roller of the at least one additional printing unit.

6. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 5, further comprising the steps of:

setting the web velocity, upon start-up of the ~~photogravure~~ gravure printing machine, when the print cylinders are brought to a uniform, regulated rotational speed, by a draw-in mechanism, and

regulating the rotational speed of each driven impression roller such that a uniform web tension results in all printing units.

7. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 5, further comprising the steps of:

setting the web velocity, upon start-up, of the impression roller of the printing unit adjacent to a draw-in mechanism, and

regulating the rotational speed of a draw-in mechanism and impression roller of the at least one additional printing unit, so that a uniform web tension results.

8. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 5, further comprising the step of:

regulating, during start-up, the rotational speed of the print cylinder in the at least one additional printing unit by an optical sensor so that register accuracy is achieved.

9. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 5, further comprising the steps of:

sustaining, during a run time, the rotational speeds of the impression rollers attained in the start-up, and

making a reaction to departures from a uniform web tension with brief variations of a set speed of a driven impression roller from the rotational speed reached during start-up.

10. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 5, further comprising the steps of:

sustaining, during a run time, the speeds of the print cylinders reached during start-up, and

making a reaction to register errors with brief departures of a set speed from the speed reached during start-up.

11. (Currently Amended) ~~Photogravure~~ Gravure printing process of claim 9, wherein the step of making a reaction to departures to produce the brief variations of the set speed of a driven impression roller includes the step of establishing an ~~acceleration or deceleration~~ advance or retardation with respect to another impression roller at the drive of the other impression roller.

12. (Currently Amended) ~~Photogravure~~ Gravure printing process ~~method~~ of claim 10, wherein the step of making a reaction to produce the brief departure of the set speed of a print cylinder includes the step of establishing an ~~acceleration or deceleration~~ advance or retardation, with respect to another print cylinder at the drive of the other print cylinder.

R E M A R K S

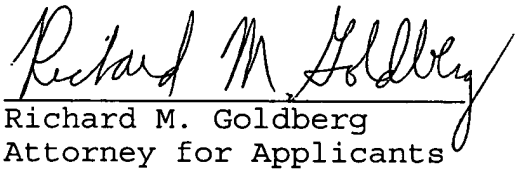
Claims 1-12 are now in this application, and are presented for the Examiner's consideration.

The title, specification, claims and abstract have been amended to clarify the language.

Please charge any additional fees incurred by this Preliminary Amendment, or credit any overpayment, to Deposit Account No. 07-1524.

It is hoped that this Preliminary Amendment will facilitate an examination of the application on its merits.

Respectfully submitted,



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